

REMARKS

The Office Action dated October 6, 2005, has been received and reviewed.

Claims 1-67 were previously pending in the above-referenced application. Claims 38-64, which have been withdrawn from consideration, have been canceled without prejudice or disclaimer. Of the claims that have been considered, each of claims 1, 8-25, 27-37, and 65-67 stands rejected, while claims 2-7 and 26 recite allowable subject matter.

New claims 68-103 have been added.

Reconsideration of the above-referenced application is respectfully requested.

Claim Amendments

Claims 1-37 and 65-67 have been amended to replace several occurrences of the term “said” with the equivalent term “the” and to remove several extraneous incidences of the term “said.” In addition, claims 4 and 14 have been amended to correct typographical errors and to improve clarity. None of these revisions narrows the scope of any of claims 1-37 or 65-67.

Rejections under 35 U.S.C. § 102

Claims 1, 8-24, and 65-67 stand rejected under 35 U.S.C. § 102(e) for reciting subject matter which is purportedly anticipated by that described in U.S. Patent Publication 2003/0080398 of Badehi (hereinafter “Badehi”).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Badehi discloses a process for fabricating packaged semiconductor devices that include contacts that extend along edge surfaces thereof. These packaged semiconductor devices are formed by providing a substrate 120, such as a wafer, that carries a plurality of semiconductor devices 122. A protective cover plate, or insulating packaging layer 126, is secured to the substrate 120, over the semiconductor devices 122 carried thereby, with a layer of epoxy 128.

Paragraph [0061]; FIGs. 3A-3C. The substrate 120 is then thinned by removing material from the back side thereof (*e.g.*, by backgrinding). Paragraph [0065]; FIG. 3D. The substrate 120 is then etched to separate the semiconductor devices 122, which are held in place by the insulating packaging layer 126, from one another. Paragraph [0066]; FIG. 3E. Once the semiconductor devices 122 have been separated from one another, or singulated, another insulating packaging layer 142 is applied to the back side of each semiconductor device 122, the spaces between adjacent semiconductor devices 122 also being filled with dielectric material. Paragraph [0069]; FIG. 3F. Linear notches 180 are then defined at locations between adjacent semiconductor devices 140, with edges 62 of bond pads 172 through which the notches 180 extend being exposed at surfaces of the notches. Paragraphs [0073] to [0076]; FIGs. 5A and 5B. Metal contacts 16 are then formed on the surfaces of the notches 180, in communication with the edges 62 of bond pads 172. Paragraph [0078]; FIG. 5D.

The method of Badehi does not anticipate several elements of independent claim 1.

For example, Badehi lacks any express or inherent description of “positioning a sacrificial substrate adjacent to a back side of a device substrate . . .” Instead, the disclosure of Badehi is limited to positioning or forming an insulating packaging layer 142, which is not to be sacrificed, adjacent to the back side of a substrate 120.

As another example, Badehi does not expressly or inherently describe “positioning a sacrificial substrate . . . with a plurality of conductive elements on an active surface [thereof] . . .” More specifically, Badehi neither expressly nor inherently describes that the insulating packaging layer 142, which is positioned against the back sides of semiconductor devices 122, includes conductive elements on a surface thereof.

Further, as the insulating packaging layer 142 of Badehi does not include conductive elements, Badehi does not expressly or inherently describe securing a surface of a sacrificial substrate (*i.e.*, the insulating packaging layer 142) to a back side of a device substrate (*i.e.*, substrate 120 or semiconductor devices 122) with a quantity of dielectric material isolating conductive elements on the sacrificial substrate from the back side of the device substrate.

Additionally, it is the insulating packaging layer 126 that has been secured over the active surfaces of the semiconductor devices 122, not the insulating packaging layer 142 secured to the

back sides of the semiconductor devices 122, that holds the semiconductor devices 122 in position when they are singulated from one another. Thus, Badehi does not expressly or inherently describe “severing [a] device substrate” while “relative positions of . . . adjacent semiconductor devices [are] maintained by [a] sacrificial substrate” (*i.e.*, the insulating packaging layer 142) that has been secured to the back side of a device substrate (*i.e.*, the substrate 120 or semiconductor devices 122).

Therefore, under 35 U.S.C. § 102(e), the subject matter recited in independent claim 1 is allowable over the subject matter described in Badehi.

Each of claims 8-24 is allowable, among other reasons, for depending directly or indirectly from claim 1, which is allowable.

Claim 10 is additionally allowable because Badehi lacks any express or inherent description of a method that includes use of a sacrificial substrate, let alone substantially removing at least a portion of a sacrificial substrate; most of the insulating packaging layer 142 of Badehi remains in place on the back sides of the semiconductor devices 122.

Claim 11, which depends from claim 10, is further allowable since Badehi does not expressly or inherently describe back grinding a sacrificial substrate. The disclosure of Badehi with respect to back grinding is limited to is limited to back grinding a substrate 120 that carries a plurality of semiconductor devices 122.

Claim 20 is further allowable since Badehi neither expressly nor inherently describes positioning a device substrate (*i.e.*, substrate 120) over a sacrificial substrate such that at least one street of the device substrate is aligned over at least some conductive elements of a sacrificial substrate.

Claim 22 is additionally allowable because Badehi lacks any express or inherent description of positioning a device substrate with at least one street thereof aligned between an adjacent pair of conductive elements of a sacrificial substrate.

Claim 23 is also allowable since Badehi lacks any express or inherent description of forming a temporary protective layer over at least portions of adjacent semiconductor devices. Instead, the disclosure of Badehi is limited to placing an insulating packaging layer 126, which

remains permanently over the active surfaces of semiconductor devices 122, over the active surfaces of the semiconductor devices 122.

Independent claim 65 is drawn to a method for assembling a chip-scale package with another semiconductor device component. The method of independent claim 65, as amended and presented herein, includes orienting a chip-scale package that includes contacts that extend along an entire height of an outer periphery thereof adjacent to another semiconductor device component and disposing intermediate conductive elements between at least some of the contacts and corresponding contacts of the semiconductor device component.

It is respectfully submitted that Badehi does not expressly or inherently describe an assembly method that involves use of a chip-scale package with contacts that extend along an entire height of an outer periphery thereof, as would be required to anticipate each and every element of amended independent claim 65. Therefore, under 35 U.S.C. § 102(e), the subject matter to which amended independent claim 65 is directed is allowable over the subject matter described in Badehi.

Claims 66 and 67 are both allowable, among other reasons, for depending directly from claim 65, which is allowable.

Claim 66 is further allowable since Badehi neither expressly nor inherently describes orienting a chip-scale package at least partially over the upper surface of another semiconductor device component such that contacts of the another semiconductor device component are exposed beyond the outer periphery of the chip-scale package, along with disposing intermediate conductive elements between the peripheral sections of at least some contacts of the chip-scale package and the corresponding, exposed contacts of the other semiconductor device component.

It is respectfully requested that the 35 U.S.C. § 102(e) rejections of claims 1, 8-24, and 65-67 be withdrawn and that each of these claims be allowed.

Rejections under 35 U.S.C. § 103(a)

Claims 25 and 27-37 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over that taught in Badehi, in view of teachings from U.S. Patent Publication 2003/0134453 of Prabhu et al. (hereinafter “Prabhu”).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claims 25 and 27-37 are each allowable, among other reasons, for depending directly or indirectly from claim 1, which is allowable.

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New Claims

New claims 68-103 have been added.

New claim 68 is an independent claim that includes limitations from the prior versions of claims 65 and 66.

New claim 69 is also an independent claim, which includes the limitations of claims 1 and 2, which the Examiner has indicated to be allowable. New claims 70-103 depend directly or indirectly from claim 68, and recite the same limitations as claims 3-25 and 27-37, respectively.

It is respectfully submitted that none of new claims 68-103 introduces new matter into the above-referenced application.

Allowable Subject Matter

The indication that claims 2-7 and 26 recite allowable subject matter is noted with appreciation. As indicated above, new independent claim 69 includes the limitations of claims 1 and 2, while new claims 70-103 depend directly or indirectly from claim 69 and recite the same subject matter as claims 3-25 and 27-37, respectively.

CONCLUSION

It is respectfully submitted that each of claims 1-37 and 65-103 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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